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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,154	02/06/2002	Jerrold E. Franklin	ALT-CMP	8513

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Daniel P. Maguire
423 E Street
Davis, CA 95616

EXAMINER
CANTELMO, GREGG

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-16

Office Action Summary	Application No.	Applicant(s)	
	10/068,154	FRANKLIN ET AL.	
	Examiner	Art Unit	
	Gregg Cantelmo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. In response to the amendment received July 18, 2003:

a. Claims 1-21 are pending with claim 11 withdrawn from consideration to a non-elected invention;

b. The drawing objections have been withdrawn in light of the amendment and proposed drawing changes;

c. The specification objection has been withdrawn in light of the amendment;

d. The 112 second paragraph rejection has been withdrawn in light of the amendment;

e. The prior art rejections to Diethelm stand;

f. The prior art rejections to WO '638 are withdrawn in light of Applicant's arguments.

Election/Restrictions

2. This application contains claim 11 drawn to an invention nonelected with traverse in Paper No. 6. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Drawings

3. The proposed drawing changes filed July 18, 2003 have been reviewed and are approved for examination purposes.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5, 8-10 and 12-21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,270,131 (Diethelm).

Diethelm discloses a fuel cell assembly (Fig. 7) comprising a membrane electrode assembly (1a/1b/1c), a bipolar separator plate 30 and independently acting compliant electrical contacts 4 disposed between the membrane electrode assembly (MEA) and the bipolar separator plate (Fig. 7 as applied to claim 1). The contacts are attached to the bipolar separator 30 and MEA 1 and are pressed against each other due to the compressive force applied to the stack. Claim 1 is not sufficiently limiting to exclude the electrical contacts attached to the MEA (as applied to claim 1).

In addition the claim is drawn to an apparatus and not a method of manufacturing the apparatus. Thus the end result of the fuel cell array of the prior art of Diethelm has the same structural configuration as recited in the instant claim and the term pressing does not provide ample structural differentiation to the claims.

In apparatus, article, and composition claims, there must be a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Claims directed to apparatus must be distinguished from the prior art in terms of structure. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

This argument is linearly applied to all apparatus claims discussed in this 102 rejection.

Diethelm discloses a fuel cell stack (Fig. 7) comprised of a first assembly according to claim 1 and a second assembly according to claim 1, wherein the electrical contacts 4 of the first assembly are in electrical contact with the MEA of the second assembly (as applied to claim 2).

The electrical contact members are flexible so that they can resiliently respond to changes in size of the cell but are also sufficiently rigid to provide support for the electrode plate (col. 4, ll. 14-19). These members being both flexible and resilient are held to have spring properties (as applied to claim 3).

The contact elements can be S-shaped (col. 4, ll. 64-66 as applied to claim 5).

The electrical contacts 4 are formed into an array having a length and width, wherein the MEA has a respective length and width and wherein the length and width of the array of contacts 4 is spans the length and width of the MEA (Figs. 6 and 7 as applied to claims 8-10).

Diethelm discloses independently acting compliant electrical contacts 4 for maintaining electrical contact between a bipolar separator plate 30 and a membrane

electrode assembly (1a/1b/1c) in a fuel cell stack (Fig. 7 as applied to claim 12). The contacts are attached to the bipolar separator 30 and MEA 1 and are pressed against each other due to the compressive force applied to the stack. Claim 12 is not sufficiently limiting to exclude the electrical contacts attached to the MEA (as applied to claim 12).

The electrical contact members are flexible so that they can resiliently respond to changes in size of the cell but are also sufficiently rigid to provide support for the electrode plate (col. 4, ll. 14-19). These members being both flexible and resilient are held to have spring properties (as applied to claim 13). The contacts are attached to the bipolar separator 30 and MEA 1 and are pressed against each other due to the compressive force applied to the stack. Claim 13 is not sufficiently limiting to exclude the electrical contacts attached to the MEA (as applied to claim 13).

Diethelm discloses a method for maintaining electrical contact between a bipolar separator plate 30 and a membrane electrode assembly (1a/1b/1c) comprising placing independently acting compliant electrical contacts 4 between said bipolar separator plate 30 and said membrane electrode assembly (MEA) in a fuel cell stack (Fig. 7 as applied to claim 14). The contacts are attached to the bipolar separator 30 and MEA 1 and are pressed against each other due to the compressive force applied to the stack. Claim 14 is not sufficiently limiting to exclude the electrical contacts attached to the MEA (as applied to claim 14).

Diethelm discloses a fuel cell assembly (Fig. 7) comprising a membrane electrode assembly (1a/1b/1c), a bipolar separator plate 30 and means 4 for making

electrical contact between the membrane electrode assembly (MEA) and the bipolar separator plate. The claim does not specify the degree of flexibility of the means for making electrical contact. All materials, including the elements 4 have a degree of flex relative to the amount of force exerted upon the material (Fig. 6 as applied to claim 15). The contacts are attached to the bipolar separator 30 and MEA 1 and are pressed against each other due to the compressive force applied to the stack. Claim 16 is not sufficiently limiting to exclude the electrical contacts attached to the MEA (as applied to claim 16).

Diethelm discloses a fuel cell assembly (Fig. 6) comprising a membrane electrode assembly (1a/1b/1c), a bipolar separator plate 30 and electric contact members 4 for making electrical contact between the membrane electrode assembly (MEA) and the bipolar separator plate. The claim does not specify the degree of flexibility of the electrical contact members for making electrical contact. All materials, including the elements 4 have a degree of flex relative to the amount of force exerted upon the material (Figs. 6 and 7 as applied to claim 16). The contacts are attached to the bipolar separator 30 and MEA 1 and are pressed against each other due to the compressive force applied to the stack. Claim 16 is not sufficiently limiting to exclude the electrical contacts attached to the MEA (as applied to claim 16).

The electrical contact members are flexible so that they can resiliently respond to changes in size of the cell but are also sufficiently rigid to provide support for the electrode plate (col. 4, ll. 14-19). These members being both flexible and resilient are held to have spring properties (as applied to claim 17).

The fuel cell assembly of Diethelm comprises a bipolar separator plate 30, having first and second sides; a membrane electrode assembly (1a/1b/1c) attached to the first side of the separator 30 via either contacts 4 or edge sealing means and sealed along the periphery of the MEA, and independently-acting compliant electrical contacts are attached to the second side of the separator (Fig. 7 as applied to claim 18).

Diethelm discloses a fuel cell stack (Fig. 7) comprised of a first assembly according to claim 18 and a second assembly according to claim 18, wherein the electrical contacts 4 of the first assembly are in electrical contact with the MEA of the second assembly (as applied to claim 19).

Diethelm discloses a fuel cell assembly (Fig. 7) comprising a membrane electrode assembly (1a/1b/1c), a bipolar separator plate 30 and an independently-acting compliant electrical contact 4 for making electrical contact between the membrane electrode assembly (MEA) and the bipolar separator plate (as applied to claim 20).

Diethelm discloses a fuel cell assembly (Fig. 7) comprising a membrane electrode assembly (1a/1b/1c), a bipolar separator plate 30 first means 4 for maintaining electrical contact between the membrane electrode assembly (MEA) and the bipolar separator plate and second means along the periphery of the stack for sealing the MEA with the bipolar separator plate 30 wherein the second means functions independently from the first means (Fig, 6 as applied to claim 21).

The contacts are attached to the bipolar separator 30 and MEA 1 and are pressed against each other due to the compressive force applied to the stack.

Independent claims 18, 20 and 21 are not sufficiently limiting to exclude the electrical contacts attached to the MEA (as applied to claims 18, 20 and 21).

Response to Arguments

6. Applicant's arguments filed July 18, 2003 have been fully considered but they are not persuasive.

Applicant argues that Diethelm does not teach that the electrical contacts are pressed against the electrode layer. The Examiner respectfully disagrees.

The shape, arrangement and function of the flexible contact elements press against both the MEA and BSP so as to resiliently respond to the changes in size of the fuel cell stack due (figures and col. 4, ll. 14-19).

Further the claims, as written, do not exclude an arrangement wherein the contact elements are fixed to both the MEA and BSP.

Lastly, and with respect to the apparatus, the term pressing does not appear to provide sufficient structural differentiation between the claimed invention and the prior art of Diethelm. The fuel cell array of the prior art of Diethelm has the same structural configuration as recited in the instant claims and the term pressing does not provide ample structural differentiation to the claims. In apparatus, article, and composition claims, there must be a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Claims directed to apparatus must be distinguished from the prior art in terms of

structure. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

Applicant argues that the distinction between the instant invention and Diethelm is critical since the MEA and BSP are fixed to each other by way of the flexible electrical contacts. Arguments drawn to the modular nature of the instant invention has no immediate bearing on the patentability of the instant claims since there is insufficient structure in the claims to define a modular arrangement. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

For the reasons set forth above, it is maintained that the prior art of Diethelm still anticipates claims 1-3, 5, 8-10 and 12-21 and the rejection stands.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diethelm in view of U.S. patent No. 6,224,396 (Chan).

The teachings of claims 1, 12 and 16 with respect to Diethelm have been discussed above and are incorporated herein.

The differences between the instant claims and WO '638 are that WO '638 does not disclose that the contacts 20 are springs having an inverted V-shape (claim 4) or X-shape (claim 6).

A Z-shape is comprises of two V-shaped portions wherein one V-shape portion of the Z-shape spring is inverted relative to the other V-shaped portion of the Z-shape spring (Fig. 5C as applied to claim 5).

Chan discloses that spring connectors and more particularly Z-shaped electrical contacts have been conceived and applied in the art of electrical connections (abstract, col. 5, ll. 8-11 and figures). The Z-shaped configuration prevents bowing or cracking of the connected structure (abstract as applied to claim 6).

The motivation for using a Z-shaped configuration which comprises inverted V-shaped sections therein for the electrical contacts is that it provides a contact shape that eliminates bowing or cracking of the electrical contacts.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Diethelm by using a Z-shaped configuration which comprises inverted V-shaped sections therein for the electrical contacts since it would have provided a contact shape that eliminates bowing or cracking of the electrical contacts.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Diethelm in view of U.S. Patent No. 5,299,939 (Walker).

The teachings of claims 1, 12 and 16 with respect to Diethelm have been discussed above and are incorporated herein.

The differences between the instant claims and Diethelm are that Diethelm does not disclose that the contacts 20 are springs (claims 3, 13 and 17) or springs are omega shaped having a height and a tapered middle section, said tapered middle section having a width and wherein the width is at least 50% as great as the height (claim 7).

Walker discloses that spring connectors and more particularly omega-shaped electrical contacts have been conceived and applied in the art of electrical connections (abstract, 1-3) and the width of the sides of the connectors are at least 50% as great as the height of the connector.

The motivation for using a omega-shaped contacts for the electrical contacts is that it provides contacts having a high density, substantial compliance to provide compensation variations such as manufacturing tolerances and thermo-mechanical expansion, low contact resistance and low inductance. In addition the omega-shaped contact function that when an external force is applied on the spring, the spring deflects accordingly (Fig. 3).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Diethelm by using an omega-shaped contact having a tapered middle section, said tapered middle section having a width and wherein the width is at least 50% as great as the height since it would have provided contacts having a high density, substantial compliance to provide compensation variations such as manufacturing tolerances and thermo-mechanical expansion, low contact resistance and low inductance.

Response to Arguments

10. Applicant's arguments filed July 18, 2003 have been fully considered but they are not persuasive.

Applicant argues that that Chan and Walker are not drawn to the fuel cell art.

In response to applicant's argument that Chan and Walker are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the prior art is reasonably pertinent to the particular problem of providing electrical contacts of varying shape to provide electrical contact between components in an electrical system.

Furthermore there is no apparent criticality of these shapes (see page 8, ll. 9-12 of the instant application). Absent any criticality selection of the particular shape does not appear to have novelty.

Conclusion

11. With respect to WO '638, while the prior art rejection stands, this is not an express concession that the prior art does not teach or suggest the claimed invention. Applicant's arguments appear to basically fall under the fact that because the prior art is not in English, it does not anticipate the claimed invention. Such an argument on it's own is not persuasive since a translation or understanding of the German language may

expand on the *disclosure* of the prior art. A complete and certified translation of the German document is pending which may result in reinstatement of the prior art if the translation proves to be applicable to the claimed invention.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

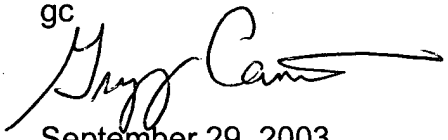
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (703) 308-2383. FAX communications should be sent to the appropriate FAX number: (703) 872-9311 for After Final Responses only; (703) 872-9310 for all other responses. FAXES received after 4 p.m. will not be processed until the following business day. Any inquiry of a

general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gregg Cantelmo
Patent Examiner
Art Unit 1745

gc



September 29, 2003